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A FRAGMENT OF THE COSMOLOGIC ARGUMENT

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In these days when theology, "queen of sciences," is discredited and neglected, and religion is the more praised as it is the more attenuated and dissolved, it is well to remember that religion hangs on one theologic dogma, that of the existence of God. Deny God, and the basis of religion is removed. Religion is a branch of ethics. Ethics has to do with duty, duty to any beings with whom one has relations. Religion has to do simply with duty to God, just as other ethics has to do with duties to man, beast, the earth, or any other being or creature that exists. We have moral duties to God, if we believe in a God, and the exercise of them is religion. Our common morals, that is, our duties to the world, are religious so far as these duties are performed with a view to our obligation to God.

Perhaps it is the acceptance of the doctrine of evolution, with its undermining of so much of the popular argument for design, which has led to the insistence on the argument for theism drawn from consciousness, from a sense of the immanence of God, or idealistic monism, whatever it may be called, which asserts that we may have such a relation to God that the individual may recognize somehow that larger Something of which he is a part. In the falling away from the mechanical argument which makes God a watchmaker who winds up the watch and lets it go, it is beautiful to conceive or believe oneself thus to be a little uprush or outburst of God. But very few commonplace, practical people can discover any such consciousness of God as immanent or working in themselves. It is a language too transcendental for them. And what of the criminal man? It seems profane—it is nothing less than profane—to think of a criminal as a sort of pimple or ulcer on God. But what else is he?

Beyond all question the old argument for design needs restatement. The biologist tells us that the present order of plants and animals has been produced under a natural law of evolution, and he gives us the close succession of the species of the horse, and then he points out the stages by which the various organs have advanced to their present perfection. That undermines our argument for design; but yet we want to ask some questions of our biologists. Is it clear that these modifications have come by regular sequence, each naturally evolved from the preceding one? Are there not cases in which, by a sort of biologic prolepsis, organs have come into being anticipatory of their functions, prepared for that function which should arrive? The original method of propagation in the lower orders of life is by fission, while in the higher orders of life it is by the conjunction of two sexes. How can the second method grow out of the first? Is it true that evolution can give us two sexes, developed out of the method of fission, prepared beforehand to anticipate the service which they will render? The fact that the lower forms of sexualism are imperfect does not explain how it could have begun under evolution. There seem to be a multitude of such anticipatory functions or organs, that appear to be beyond the power of Darwinism to explain, and which the newer formulation of the argument of design must consider.

But even so, and with all similar examples by way of exception, the rule stands that the bulk of that in which we used to see the immediate proof of design is transferred to the domain of evolution. The hand, the eye, were not created *ab initio*, as a man makes a watch, but have been slowly produced under natural law. Now we are taught that out of the lowest forms of life, and very possibly or probably, out of inanimate matter, the laws or powers of nature have organized the cosmos as we see it. We are obliged to accept this as the historic fact, at least that there has been this progressive development under laws whose operation we in good part see. To be sure this puts the question of origin back, and compels us to ask no longer whether the eye requires a wise designer, but rather, whether the cosmos itself, with all its laws and all their operation and creative results must not have had a designer of even more infinite wisdom than that which could plan a single mechanical contrivance like the eye. In our retreat from the argument for design which was good enough for Paley and the Bridgewater Treatises, we have been forced to put back the design into the mind of God in his first creation of the world, and assure ourselves that there must have been a Being who was so wise a Designer, that he could put the laws or powers into the first formless mist and flux of things, which would work out all this differential universe of stars and life. But that not only put God far back, but so far back that it was difficult for us to discover him. Indeed that sends us back to the cosmological argument which seeks to account for the first existence of things. It removes from us the argument for a God who still controls and guides his universe, and who, in infinite wisdom, out of matter living or dead designs the human eye and arranges its humors and lenses to create a perfect machine. It may be, for aught we know, that in some mysterious way, in the infinite attractions of atoms and their yet more minute components, of which we are told there are a thousand in an atom of hydrogen, some fortunately came together in relations that possessed the primordial qualities of vitality, and that, by slow evolution and choice of adaptation, there have been evolved all the present forms of life. This may be; many of our best scientific authorities are inclined to believe it; and if this is probable or credible, then, if true, the necessity of postulating a great original Designer is less evident. But there are, I think, not a few of the adaptations and contrivances of life which it does not seem can be thus explained; and which seem to leave us a certain portion of the argument for design.

Thus the form of argument for design to which we are to so great an extent driven, finds, as has been said, the plan and design of the universe chiefly in its laws which by their operation produce living organisms as well as the inorganic world; and this really sends us back to the so-called cosmologic argument for the existence of God.

That argument has appealed to me in about this form: The universe exists; it is as it is; does it possess the characteristics of self-existence independent of source from something existing outside of itself, or does it possess the characteristics of contingency—not self-existent, but contingent on some cause without itself? The proof that the latter is the fact, which long satisfied me, was that it exhibits the characteristics of contingency as follows:

That which is self-existent exists from some necessity within itself, and therefore that necessity is independent of time and place, and must act everywhere and always the same. What is necessary and self-existent must be eternal and universal, always and everywhere.

This we can see easily in the matter of the *relation* of things. Thus everywhere and always the three angles of a triangle are equal to the two right angles. God did not make it so. It is so of itself, and God could not change it. So, again, two contiguous mountains must have a valley between them. So the elements of morality are independent of God, and are involved in the existing or imagined relations of two sentient beings. Just as the juxtaposition of three lines so as to enclose a space involves mutual angular relations, so the juxtaposition of intelligent beings one to another involves moral relations entirely independent of God. To be sure these are examples of relations, which are abstract, and not of concrete actualities; but we are seeking a principle to apply to things antecedent to the existence of the universe as we know it, and whose qualities we are discussing. We may, however, add that, so far as we can judge, time and space are examples of what exists by an inherent necessary self-existence, uncreated, unchangeable, universal, eternal.

Now, whatever does not possess these qualities of self-existence, universal, eternal, is contingent. Whatever is not always and everywhere the same in its essence is contingent, had a beginning, had a source, and such a source we can only call the self-existent God.

Now I have been in the habit of saying that it is just this quality of contingency which I find in the universe. That it was not always we may not be able to say, for all we know is that it has existed for countless millions of years. We see in the heavens at the present time new worlds created by the collision of dead stars, the birth of new stars, *novae*, as the astronomers call them, and implying a succession of time, beyond our imagination, in which solar systems have geologically been produced, ran their allotted period, became darkened and extinct, and in their turn renewed, to begin over again their almost infinite period of nebula, succeeded by sun and planets, and again reduced to frozen death in the spaces of absolute cold. This is true; we cannot limit thus the beginning of this succession. We might presume it to be eternal. But we reach a different result when we consider the necessary assumption that what is necessarily existent, self-existent, must exist not merely always, but everywhere the same. What do we find? We find matter composed of seventy or eighty elements. These have appeared ultimate, the materials which we have said God put here out of which to create his world. Do these atoms have the qualities of self-existence or those of contingency? Certainly the latter. There are seventy or eighty different elements unlike each other. Neither do they exist everywhere. Here we have oxygen, there hydrogen, there carbon. These atoms exist in countless millions here on the earth. They exist also in the stars, or some of them, as meteorites suggest and as the spectroscope proves. But between us and Sirius they do not exist. There is evidently no inherent necessity which requires them there, for there they are not. In the space occupied by an atom of oxygen there is no hydrogen. The atoms of gold exclude silver from the spot occupied by them. They have as much the appearance of being contingent as do a collection of red and white billiard balls.

Now this argument used to seem to me conclusive; but the new chemistry requires it to be modified, just as the new biology has required the argument for design to be modified; and yet I doubt if this necessity has properly been recognized by theologians.

Chemists have themselves come to admit that atoms are contingent. This first came with the conjecture that they are not ultimate, but are themselves composite; and it was made almost conclusive by the discovery of Mendeleef's law, which showed that the chemical elements, oxygen, hydrogen, etc., can be arranged in an ascending series with corresponding qualities, like a series of steps on a flight of stairs. By adding so much to the combining weight of an element you can tell what the nature of the new element will then be; and actually elements have thus been foretold, and later discovered, just as mathematically Le Verrier and Adams foretold the position of the new planet Neptune and put the telescope to the spot. This seems to imply that all the seventy or eighty elements are composed of one and the same substance, and that the addition of something more of that substance changes one element into another. If that is true we do not have so many diverse atoms, but one single sort of atom, and this takes away so much of the argument of contingency.

Still further, the later chemistry confirms this presumption. The present evidence seems to show that there is such a common element in atoms called the corpuscle or electron; and that there are a thousand of these corpuscles in an atom of hydrogen, hydrogen being that element which has a smaller combining weight than any other known, while others have two or three hundred as their combining weight. Each of these corpuscles carries a charge of negative electricity, and in certain conditions, as in some solutions, they move from one atom to another with their charge of electricity and are then called ions. Some chemists will not venture to go farther than to call these electrons force rather than matter. At any rate we may conclude that these corpuscles are, so far as we know, alike and are the common material of chemical atoms and of all matter. Corpuscles and electrons are the same thing, or practically so. Considered simply as a negative electric charge they are electrons, bits of force. Considered as that which carries the electric charge, if there is any substratum to them, they are corpuscles. When moving to a new combination they are ions. Why a certain number of corpuscles combine in one way to form oxygen, and others otherwise to form the other elements, we cannot guess. We only admit the apparent fact. Their unity, as the one basis of all matter, to that extent weakens the argument of cosmology drawn from the diverse and apparently mechanical construction of the universe out of diverse materials.

Now next, what are these corpuscles? This is the great, the tremendous problem of chemical physics, the greatest question now before the scientific world and one not yet answered. Of all discoveries, possible, perhaps, but as yet unattained by human research, no other, I think, may we so much covet to know, as just what corpuscles or electrons are, and what their relation to the ether in which they swim. It is a question whose investigation theology may properly watch with interest; not because religion depends on it, nor because this or any other scientific problem affects religion, unless science should undermine our faith in the existence of God and send us back and down to pure mechanical materialistic monism. But the answer to scientific questions does affect theology, as we have seen for two generations, and it is a matter of tremendous importance for theology, and for those whose religion depends on their theology, that we should follow closely the developments of science and not lag behind, as did the Roman church in the days of Galileo, when a monk preached a sermon against the new astronomy from the text: "*O viri Galilaei, quare statis in coelum aspicientes?*" "O men of

Galileo, why stand ye gazing up into heaven?" If we fall behind, these scientific men will get ahead and away from our religion.

I ask, then, what do physicists now believe or conjecture to be the nature of this *materia ultima*, this last basis of all matter? The answer is a very interesting one to the theologian, and affects the argument from cosmology. They incline to believe that each and every corpuscle is a knot, or loop, or whirl, or vortex, strain, dint, or hole, in the universal ether, something as a ring of smoke is created from the puff of a cigar; that, once formed, it is permanent, and that out of such knots, or loops, or whirls, vortices, strains, or what not, is all matter composed—all corpuscles; and all atoms and elements out of these corpuscles; and all visible matter, from the grain of sand to the largest orbs of the vastest solar system, out of these seventy or eighty elements, but all, ultimately, mere twists, or affections, or modifications of some sort in the ether. I quote from Sir Oliver Lodge's book, *Electrons, or the Nature and Properties of Negative Electricity:*

> Especially must the inner *ethereal* meaning both of positive and negative charges [that is electrons] be explained: whether on the notion of a right- and left-handed, self-locked, gyrostatically stable *ether* [my italics] elaborated by Larmor, or on some hitherto unimagined plan (p. 203).

He assumes that electrons, corpuscles, are some modification of ether. The electron is a charge of negative electricity. Just what the positive electricity is, and where or how it resides, is not known.

Now we have come back to something very interesting. What is that ether? We have for many years known nothing about it except, since the formulation of the undulating theory of light, that there is an ether, not air, vastly more attenuated than any known gas, whose waves bring us light from the sun and the stars. It is frictionless, impalpable, but it is something, and it is everywhere. In these very last years we are beginning to find out something more about this ether. For example, as our voice is carried through waves of air, and as a telephone message is carried by swift moving ions along a wire, so somehow, we do not understand exactly how, the message in wireless telegraphy is carried, not by waves of air, not by ions on an electrically charged wire, but actually by some sort of waves in the ether itself. This is amazing, but it teaches us the importance of knowing all we can of what ether is.

About all we seem to know of its properties is that it is the basis of all matter; that it carries various sorts of waves, light, heat, etc.; that it is impalpable, frictionless, and that it is everywhere. This last is the important quality for our theistic question.

For ether, so far as we can see, like time and space, answers the conditions for that which is self-existent. It seems to be everywhere. It extends through all space, or at least, as far as the most distant star. The entire known universe exists in it and depends on it. So far as we can see it always existed, is from before all beginning. It is not, like time and space, a category, nor is it abstract, like an angle or duty; it is an essence, a something, always, everywhere. Is ether then self-existent? We see no evidence that it is contingent. Is ether God? It must be the God of the materialistic monist, and equally of the pantheist, for there is nothing that exists for them but ether and its modifications: Pan-ether is pan-God, the God Pan.

But the question again arises. Is ether wholly without the quality of contingency? Admitting that ether is self-existent and eternal, if you please, and universal, everywhere, is there in it nothing contingent? It seems to me there certainly is.

Let us in imagination now go back into the infinite abyss of time. Let us imagine a time when nothing existed but this ether. Its inherent necessity which, we may conceive, made it exist from all eternity, must have acted everywhere and always in the same way. Inherent necessity does not act differently in one place or time from what it does in another. There was then just one sort and form of primordial ether existing everywhere in one sort of way. If there was no outside cause of change there would be no change, nothing else but universal, homogeneous ether from eternity to eternity. If we are to think of ether as necessarily existent, self-existent, we must think of it as absolutely uniform throughout the universe, whether in infinite or infinitesimal space. There will be no interspaces where ether is not, no inequalities, no minutest agglomerating nuclei about which any vague attraction could collect differentiating materials to develop into atoms or worlds; for necessary existence implies perfect continuous uniformity of the ether. It had no force in itself to change itself. It was not wound up so as to change its nature of itself; for the inherent necessity which made it uniform could not suddenly change its inherent nature and make it diverse.

But it has turned into another way. It has in certain places, not in all places, as a general necessity might possibly be imagined to require, but only here and there, changed into corpuscles, electrons, ions, and these again into atoms, chemical elements. Their amount is limited—very numerous corpuscles just here on the earth, but the merest infinitesimal fraction of universal ether. A certain portion of the ether occupying universal space has in some way been converted into corpuscles and endowed with movement and force of various sorts. What does this mean? How does it happen? The condition cannot be anything else but contingent, and if contingent what is the force, the Being that intervened and converted the universal homogeneity into a partial heterogeneity? I am content to call that force, that Being, the *Deus ex machina*, God.

Far be it from me in this paper to deny the validity of all other arguments for the existence of God, and to base the proof solely on this particular phase or fragment of the cosmological argument. I know very well that it is not the argument that appeals to most, for there seems to be a certain universal instinct, if not evidence, for God, which somehow carries general conviction. It has only occurred to me to try, for my own mind, to formulate the ideas and to answer the questions that will come to one who cannot but see that new discoveries in science impinge on old and accepted statements of theology. Yet I think that to most of us somehow the existence of the world about us seems to require a creator and ruler: for we say with Paul:

> The invisible things of him since the creation of the world are clearly seen. being perceived through the things that are made, even his eternal power and divinity;

or with Job, in almost that only other passage in the Bible which directly presents the theistic argument,

> Ask now the beasts and they shall teach thee;
> And the fowls of the air and they shall tell thee;
> Or speak to the earth and it shall teach thee,
> And the fishes of the sea shall declare unto thee;
> Who knoweth not in all these
> That the hand of the Lord hath wrought this?